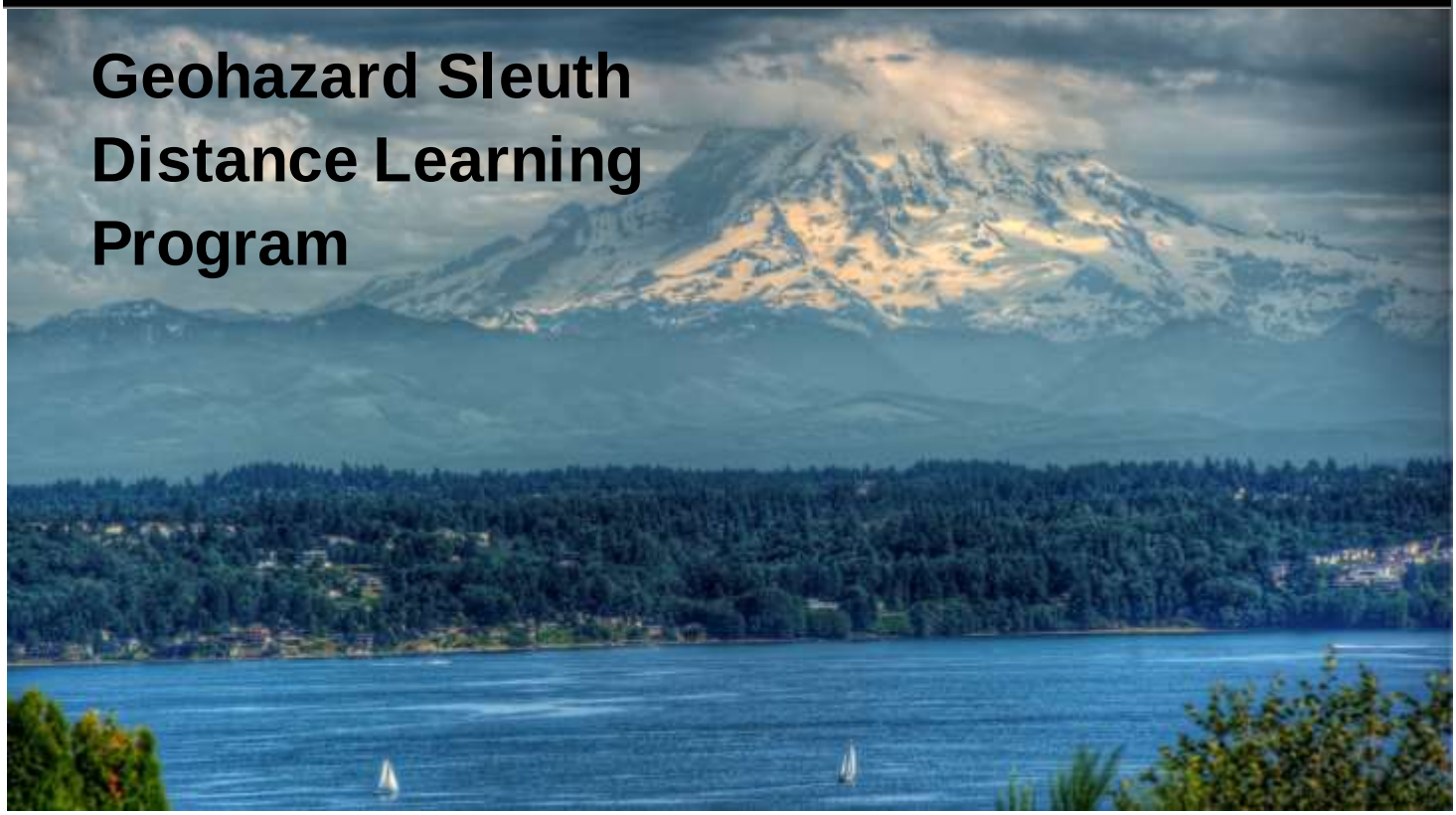
Mount Rainier

National Park Service
U.S. Department of the Interior

Mount Rainier Naitonal Park
Ashford, WA



Geohazard Sleuth Distance Learning Program

Activity: Mount Rainier in Earth's Systems

Subjects: Earth's systems, Geohazards

Grade Level: 5th – 8th

Time Requirements: 25-35 minutes

Standards Addressed:

5-ESS2-1	Earth's Systems
MS-ESS2-1	Flow of Energy
MS-ESS2-2	Geoscience Process
MS-ESS2-3	Plate Motions
MS-ESS2-4	Water Cycle
MS-ESS2-5	Weather and Climate

Lesson Overview

For many people in the Northwestern area of the state of Washington, a good day is when "the mountain is out." Mount Rainier's prominence is easily seen, from its depiction on the state quarter to the many groups who use the image on their advertisements and merchandise. This proximity to the cities and people also makes Mount Rainier a "decade volcano", or one that is potentially deadly. Not only does Mount Rainier affect the local population, but also affects and is affected by the earth's systems. Through Geohazard Sleuth, students can connect with a Park Ranger to explore Mount Rainier's geology and potential danger with this interactive program.

Lesson Objectives

By the end of this program, students will be able to:

- Demonstrate the different ways tectonic plates interact.
- Recall the four Earth's systems and report on how Mount Rainier fits into each system.
- Consider the different geohazard's Mount Rainier displays when experiencing decision making situations.

Background Information

Mount Rainier has been a National Park seventeen years before there was the National Park Service. What makes Mount Rainier National Park special can be different to the millions of people who visit the park every year. Yet, in the middle of it all, stands a volcanic mountain 14,410 feet tall and is one of sixteen volcanoes considered a "decade volcano." A decade volcano is one that displays geologic hazards, is still active, and is located next to a large population center. Mount Rainier has all of these requirements.

"In the deep forests of Mount Rainier, the sun doesn't rise, it leaks in thin bands through the trees (Barcott, The Measure of a Mountain)." The surrounding biosphere may not always reflect on the dangers Mount Rainier can pose, but nevertheless the effect Mount Rainier has can been seen everywhere in the topography. The ridges made from previous eruptions and cooled into black volcanic rock, the "U" shaped valleys carved by glaciers, the changes made by rock fall or debris flows, the tephra deposits made by explosive pyroclastic flows, and the surrounding landscape chiseled by volcanic mudflows or glacial outburst floods; just reading the landscape one can imagine the power that is Mount Rainier.

The different hazards that come from Mount Rainier validate this volcano's role in the Earth's systems. Formed when the oceanic tectonic plate Juan de Fuca is subducted under the less dense North American plate, the pressure from this process caused magma and gasses to build. The height of Mount Rainier allows twenty five major glaciers to stand and the melt from these glaciers affect the surrounding hydrosphere. The height of the mountain also affects the weather creating an orographic lift and in turn producing the rainforest ecosystem found in the wettest parts of the park. Combined, Mount Rainier is not only a great tool to study the various Earth's system, but it in and of itself is a multifaceted wonder teeming with life and power.

Supplemental Materials

In addition to the distance learning requirements, please feel free to explore prior to the program:

www.nps.gov/mora (Learn About the Park: Nature, etc)

https://volcanoes.usgs.gov/volcanoes/mount_rainier/

Videos: nps.gov/mora/learn/photosmultimedia/video.htm

Youtube: www.youtube.com/user/MountRainierNPS/videos

Facebook: www.facebook.com/MountRainierNPS/videos

Procedure

EXPERIENCE YOUR AMERICA™

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Prior to the program: Have the students complete the pre-program activity as well as explore some of the supplemental materials. Introduce the state of Washington and some of the plants and animals found at Mount Rainier. Look at the park map and identify major areas and features of the park like the summit, roads, trails, and general size of the park. Have the students generate questions for the ranger to be asked after the program or as time allows. The students will be prompted throughout the program, so be sure to brief the students on how to answer questions and speak clearly into the microphone or computer.

During the Program: Have the students seated so wherever they are they can see the video screen. The ranger will share pictures, graphics, audio, and other props in an interactive program.

Assessment

This program covers a wide variety of topics. To complement the distance learning program, feel free to choose from the following activities organized by topics and pre-program / post-program to give your students a well rounded lesson. All of these lesson plans are located on our website: www.nps.gov/mora/learn/education/classrooms/curriculummaterials.htm or in our Living with a Volcano in Your Backyard (LVB) curriculum.

For a Geologic Focus: Pre-program Lava Building Blocks (LVB), Post-program Shoebox Geologist (LVB)

For a Weather Focus: Pre- and Post -program Webcams: A Window of Weather

For a Geohazards Focus: Pre-program Lahar in a Jar (LVB), Post-program Rock Rubble Reivew (LVB)

For a Volcanic Focus: Pre-program Eurption! (LVB), Post-program Cacade Volcano Timeline (LVB)

For a Mount Rainier Specific Focus: Pre-program Planning your Trip to Mount Rainer (LVB), Post-program Living Well with a Volcano in your Backyard! (LVB)